

## **LINN ENERGY**

2130 W. Bender Blvd.  
Hobbs, NM 88241  
Phone 575.738.1739

# H.E. West B Federal #041 2RP-1863

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## Corrective Action Plan

API No. 3001526033  
Release Date: August 16<sup>th</sup>, 2013  
Unit Letter N, Section 10, Township 17S, Range 31E

# Rice Environmental Consulting & Safety

P.O. Box 2948, Hobbs, NM 88241

Phone 575.393.2967

**October 25<sup>th</sup>, 2013**

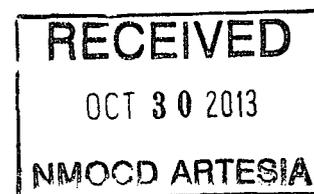
**Mike Bratcher**

New Mexico Energy, Minerals, & Natural Resources

Oil Conservation Division, Environmental Bureau – District 2

811 S. First St.

Artesia, NM 88210



**RE: Corrective Action Plan (CAP)**

**Linn Energy – H.E. West B Federal #041 (2RP-1863)**

**UL/N sec. 10 T17S R31E**

**API No. 3001526033**

Mr. Bratcher:

Linn Energy (Linn) has retained Rice Environmental Consulting and Safety (RECS) to address potential environmental concerns at the above-referenced site.

## **Background and Previous Work**

The site is located approximately 7 miles northeast of Loco Hills, New Mexico at UL/N sec. 10 T17S R31E. This site is in an area of no known groundwater.

A release occurred on August 16<sup>th</sup>, 2013 from a hole that developed in a 3 inch junction. A total of 20 gallons of produced water and 5 gallons of oil was released onto 710 sq ft of lease road and pasture. None of this material was recovered. BLM and NMOCD were informed of the release and an initial C-141 was approved by NMOCD on August 26<sup>th</sup>, 2013 (Appendix A).

On September 9<sup>th</sup>, 2013, RECS personnel were on site to begin assessing the release. Samples were taken from the surface and with depth at three locations throughout the release (Figure 1). The samples were field tested for chlorides and hydrocarbons and representative samples were taken to a commercial laboratory for analyses (Appendix B). The surface samples at the three points showed elevated laboratory chloride levels, Gasoline Range Organics (GRO) readings of non-detect and elevated Diesel Range Organics (DRO) readings. At Point 2, the laboratory chloride levels dropped to below 250 mg/kg at 2 ft bgs and at Point 3, the laboratory chloride levels dropped to below 250 mg/kg at 3 ft bgs. DRO levels in Point 2 dropped to 10.8 mg/kg at 2 ft bgs and in Point 3 to non-detect at 3 ft bgs.

At Point 1, a vertical was installed on October 4<sup>th</sup>, 2013, to determine the depth of contamination. The vertical was installed to a depth of 6.5 ft where the laboratory chloride reading returned a result of 944 mg/kg (Appendix C).

Photo documentation of these activities can be found in Appendix D.

## Corrective Action Plan

Given that there is no groundwater beneath the site, RECS recommends that the site be excavated to a depth where the laboratory readings on a 5 point bottom composite is below 1,000 mg/kg for chlorides and 1,000 mg/kg for GRO and DRO combined or to a depth of 4 ft bgs, whichever occurs first. The site will be excavated horizontally until grab samples from the side walls of the excavation return laboratory chloride readings below 1,000 mg/kg and combined GRO and DRO readings below 1,000 mg/kg. The excavated soil will be taken to a NMOCD approved facility for disposal. Clean, imported soil will be backfilled into the excavation to ground surface in the pasture, while the lease road will be capped with caliche to provide a stable driving surface.

Once the site is backfilled, the pasture area will be seeded with a blend of native vegetation. Vegetation acts as an infiltration barrier for the site, since plants capture water through their roots thereby reducing the amount of water traveling through the vadose zone to groundwater.

Once the CAP activities have been completed, Linn will submit a request for 'remediation termination' or similar closure status of the regulatory file.

RECS appreciates the opportunity to work with you on this project. Please call Hack Conder at (575) 393-2967 or me if you have any questions or wish to discuss the site.

Sincerely,



Lara Weinheimer  
Project Scientist  
RECS  
(575) 441-0431

### Attachments:

- Figure 1 – Initial Sampling Data
- Appendix A – Initial C-141
- Appendix B – Initial Sampling Lab
- Appendix C – Vertical Sampling Lab
- Appendix D – Photo Documentation

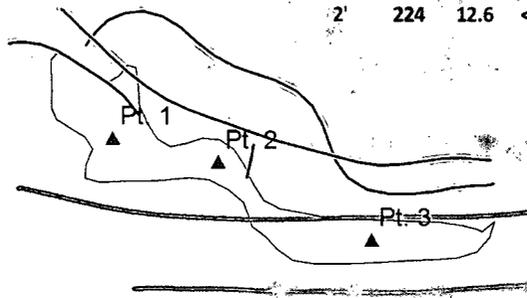
# Figures

**RICE Environmental Consulting and Safety (RECS)**  
P.O. Box 2948, Hobbs, NM 88241  
Phone 575.393.2967

# Initial Sampling Data

Point 1	CI-	PID	GRO	DRO	B	T	E	X	BTEX
SS	5520	10.4	<50	13800	<0.05	0.05	0.173	0.384	0.608
6"	856	192.4							
1'	3286	50.8							
1.5'	2034	24							
2'	1446	509.8							
2.5'	1320	33.5							
3'	1762	24.9							
3.5'	1788	22.6							
4'	1985	49.6							
4.5'	1085	10.8							
5'	1192	27.6							
5.5'	1037	7.2							
6'	848	14.6	<10	<10					
6.5'	944	9.2	<10	<10					

Point 2	CI-	PID	GRO	DRO	B	T	E	X	BTEX
SS	23000	192.4	<10	499	<0.05	<0.05	<0.05	<0.15	<0.3
6"	2921	47.5							
1'	969	88.8							
1.5'	378	66.7							
2'	224	12.6	<10	10.8	<0.05	<0.05	<0.05	<0.15	<0.3



Point 3	CI-	PID	GRO	DRO	B	T	E	X	BTEX
SS	13300	50.8	<10	10.1	<0.05	<0.05	<0.05	<0.15	<0.3
6"	688	33.9							
1'	1410	30.9							
1.5'	1457	6.5							
2'	957	2.3							
2.5'	896	11.2	<10	<10	<0.05	<0.05	<0.05	<0.15	<0.3
3'	48	28.6	<10	<10	<0.05	<0.05	<0.05	<0.15	<0.3

## Legend

- ▲ SAMPLE POINTS
- ROADWAY
- SURFACE PIPELINE
- STAIN (710 SQ FT)
- CI- FIELD DATA
- CI- LAB DATA

Landowner = BLM

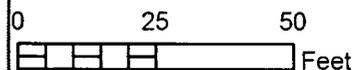
DGW = None



**LINN H.E. WEST B  
FEDERAL #041  
2RP-1863**

LEGALS: UL/N SEC 10  
T17S R31E  
EDDY COUNTY, NM

Figure 1



GPS date: 10/4/13 EC  
Drawing date: 10/8/13  
Drafted by: L. Weinheimer

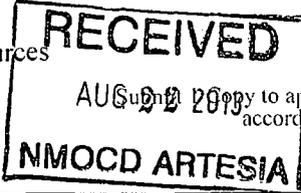
# Appendix A

Initial C-141

**RICE Environmental Consulting and Safety (RECS)**  
P.O. Box 2948 Hobbs, NM 88241  
Phone 575.393.2967

District I  
1625 N. French Dr., Hobbs, NM 88240  
District II  
1301 W. Grand Avenue, Artesia, NM 88210  
District III  
1000 Rio Brazos Road, Aztec, NM 87410  
District IV  
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico  
Energy Minerals and Natural Resources  
Oil Conservation Division  
1220 South St. Francis Dr.  
Santa Fe, NM 87505



Form C-141  
Revised October 10, 2003  
Copy to appropriate District Office in accordance with 19.15.29 NMAC

**Release Notification and Corrective Action**

*nJMW 1323833294*

**OPERATOR**  Initial Report  Final Report

Name of Company: Linn Operating <i>269324</i>	Contact: Brian Wall
Address: 2130 W. Bender Hobbs, NM 88240	Telephone No.: 575-738-1739
Facility Name: H.E. West B # 41	Facility Type: Oil Producer
Surface Owner: Federal	Mineral Owner:
API No.: 3001526033	

**LOCATION OF RELEASE**

Unit Letter N	Section 10	Township 17S	Range 31E	Feet from the 660	North/South Line South	Feet from the 2020	East/West Line West	County Eddy
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Latitude: 32.8436498158389 Longitude: -103.859578071309

**NATURE OF RELEASE**

Type of Release: Produced Water / Oil	Volume of Release: 20gal / 5gal	Volume Recovered: 0 / 0
Source of Release: Poly Pipeline	Date and Hour of Occurrence: 08/16/2013 7:00pm	Date and Hour of Discovery: 08/16/2013 7:00pm
Was Immediate Notice Given? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not Required	If YES, To Whom? Mike Burton-BLM	
By Whom? Brian Wall	Date and Hour 08/19/2013 2:00pm	
Was a Watercourse Reached? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If YES, Volume Impacting the Watercourse.	
If a Watercourse was Impacted, Describe Fully.*:		
Describe Cause of Problem and Remedial Action Taken.*: A hole developed at a 3" junction, where West B#41 flow line ties into West B#31 flowline in route to the West B 4 tank Battery. Corrosion appears to have caused the failure.		
Describe Area Affected and Cleanup Action Taken.*: Area affected was 3' x 2' ft.		

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to NMOCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the NMOCD marked as "Final Report" does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to ground water, surface water, human health or the environment. In addition, NMOCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations.

Signature: <i>Brian Wall</i>	<b>OIL CONSERVATION DIVISION</b>	
Printed Name: Brian Wall	Approved by District Supervisor:	Signed By <i>Mike Burton</i>
Title: Construction Foreman II	Approval Date: <b>AUG 26 2013</b>	Expiration Date:
E-mail Address: bwall@linenergy.com	Conditions of Approval:	Attached <input type="checkbox"/>
Date: 08/20/2013 Phone: 806-367-0645	Remediation per OCD Rule & Guidelines, & like approval by BLM. <b>SUBMIT REMEDIATION PROPOSAL NO LATER THAN:</b>	

\* Attach Additional Sheets If Necessary

**September 26, 2013**

*2RP-1863*

# Appendix B

## Initial Sampling Lab

**RICE Environmental Consulting and Safety (RECS)**  
P.O. Box 2948 Hobbs, NM 88241  
Phone 575.393.2967

September 16, 2013

HACK CONDER  
RICE ENVIRONMENTAL CONSULTING & SAFETY LLC  
419 W. CAIN  
HOBBS, NM 88240

RE: H. E. WEST B FEDERAL #41

Enclosed are the results of analyses for samples received by the laboratory on 09/12/13 8:45.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-11-3. Accreditation applies to drinking water, non-potable water and solid and chemical materials. All accredited analytes are denoted by an asterisk (\*). For a complete list of accredited analytes and matrices visit the TCEQ website at [www.tceq.texas.gov/field/ga/lab\\_accred\\_certif.html](http://www.tceq.texas.gov/field/ga/lab_accred_certif.html).

Cardinal Laboratories is accredited through the State of Colorado Department of Public Health and Environment for:

Method EPA 552.2	Haloacetic Acids (HAA-5)
Method EPA 524.2	Total Trihalomethanes (TTHM)
Method EPA 524.4	Regulated VOCs (V1, V2, V3)

Accreditation applies to public drinking water matrices.

This report meets NELAP requirements and is made up of a cover page, analytical results, and a copy of the original chain-of-custody. If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Celey D. Keene  
Lab Director/Quality Manager

**Analytical Results For:**

 RICE ENVIRONMENTAL CONSULTING & SAFETY  
 HACK CONDER  
 419 W. CAIN  
 HOBBS NM, 88240  
 Fax To: (575) 397-1471

Received:	09/12/2013	Sampling Date:	09/09/2013
Reported:	09/16/2013	Sampling Type:	Soil
Project Name:	H. E. WEST B FEDERAL #41	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

**Sample ID: PT. 1 @ SURFACE (H302207-01)**

BTEX 8021B		mg/kg		Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.050	0.050	09/13/2013	ND	2.05	103	2.00	0.141		
Toluene*	<b>0.050</b>	0.050	09/13/2013	ND	2.19	110	2.00	1.10		
Ethylbenzene*	<b>0.173</b>	0.050	09/13/2013	ND	2.30	115	2.00	1.19		
Total Xylenes*	<b>0.384</b>	0.150	09/13/2013	ND	6.96	116	6.00	1.34		
Total BTEX	<b>0.608</b>	0.300	09/13/2013	ND						

Surrogate: 4-Bromofluorobenzene (PID) 123 % 89.4-126

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	<b>5520</b>	16.0	09/16/2013	ND	416	104	400	3.77		

TPH 8015M		mg/kg		Analyzed By: MS							S-06
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier		
GRO C6-C10	<50.0	50.0	09/13/2013	ND	200	100	200	4.71			
DRO >C10-C28	<b>13800</b>	50.0	09/13/2013	ND	192	96.1	200	3.84			

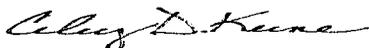
Surrogate: 1-Chlorooctane 89.8 % 65.2-140

Surrogate: 1-Chlorooctadecane 555 % 63.6-154

Cardinal Laboratories

\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

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 RICE ENVIRONMENTAL CONSULTING & SAFETY  
 HACK CONDER  
 419 W. CAIN  
 HOBBS NM, 88240  
 Fax To: (575) 397-1471

Received:	09/12/2013	Sampling Date:	09/09/2013
Reported:	09/16/2013	Sampling Type:	Soil
Project Name:	H. E. WEST B FEDERAL #41	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

**Sample ID: PT. 2 @ SURFACE (H302207-02)**

BTEX 8021B		mg/kg		Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.050	0.050	09/13/2013	ND	2.05	103	2.00	0.141		
Toluene*	<0.050	0.050	09/13/2013	ND	2.19	110	2.00	1.10		
Ethylbenzene*	<0.050	0.050	09/13/2013	ND	2.30	115	2.00	1.19		
Total Xylenes*	<0.150	0.150	09/13/2013	ND	6.96	116	6.00	1.34		
Total BTEX	<0.300	0.300	09/13/2013	ND						

*Surrogate: 4-Bromofluorobenzene (PIC) 111 % 89.4-126*

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
<b>Chloride</b>	<b>23000</b>	16.0	09/16/2013	ND	416	104	400	3.77		

TPH 8015M		mg/kg		Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
GRO C6-C10	<10.0	10.0	09/13/2013	ND	200	100	200	4.71		
<b>DRO &gt;C10-C28</b>	<b>499</b>	10.0	09/13/2013	ND	192	96.1	200	3.84		

*Surrogate: 1-Chlorooctane 85.1 % 65.2-140*
*Surrogate: 1-Chlorooctadecane 105 % 63.6-154*

Cardinal Laboratories

\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

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 HACK CONDER  
 419 W. CAIN  
 HOBBS NM, 88240  
 Fax To: (575) 397-1471

Received:	09/12/2013	Sampling Date:	09/09/2013
Reported:	09/16/2013	Sampling Type:	Soil
Project Name:	H. E. WEST B FEDERAL #41	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

**Sample ID: PT. 2 @ 2' (H302207-03)**

BTEX 8021B		mg/kg		Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.050	0.050	09/13/2013	ND	2.05	103	2.00	0.141		
Toluene*	<0.050	0.050	09/13/2013	ND	2.19	110	2.00	1.10		
Ethylbenzene*	<0.050	0.050	09/13/2013	ND	2.30	115	2.00	1.19		
Total Xylenes*	<0.150	0.150	09/13/2013	ND	6.96	116	6.00	1.34		
Total BTEX	<0.300	0.300	09/13/2013	ND						

Surrogate: 4-Bromofluorobenzene (PIC) 108 % 89.4-126

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	<b>224</b>	16.0	09/16/2013	ND	416	104	400	3.77		

TPH 8015M		mg/kg		Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
GRO C6-C10	<10.0	10.0	09/13/2013	ND	200	100	200	4.71		
<b>DRO &gt;C10-C28</b>	<b>10.8</b>	10.0	09/13/2013	ND	192	96.1	200	3.84		

Surrogate: 1-Chlorooctane 70.9 % 65.2-140

Surrogate: 1-Chlorooctadecane 83.9 % 63.6-154

Cardinal Laboratories

\*=Accredited Analyte

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Received:	09/12/2013	Sampling Date:	09/09/2013
Reported:	09/16/2013	Sampling Type:	Soil
Project Name:	H. E. WEST B FEDERAL #41	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

**Sample ID: PT. 3 @ SURFACE (H302207-04)**

BTEX 8021B		mg/kg		Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.050	0.050	09/13/2013	ND	2.05	103	2.00	0.141		
Toluene*	<0.050	0.050	09/13/2013	ND	2.19	110	2.00	1.10		
Ethylbenzene*	<0.050	0.050	09/13/2013	ND	2.30	115	2.00	1.19		
Total Xylenes*	<0.150	0.150	09/13/2013	ND	6.96	116	6.00	1.34		
Total BTEX	<0.300	0.300	09/13/2013	ND						

Surrogate: 4-Bromofluorobenzene (PIL) 109 % 89.4-126

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
<b>Chloride</b>	<b>13300</b>	16.0	09/16/2013	ND	416	104	400	3.77		

TPH 8015M		mg/kg		Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
GRO C6-C10	<10.0	10.0	09/13/2013	ND	200	100	200	4.71		
<b>DRO &gt;C10-C28</b>	<b>10.1</b>	10.0	09/13/2013	ND	192	96.1	200	3.84		

Surrogate: 1-Chlorooctane 84.5 % 65.2-140

Surrogate: 1-Chlorooctadecane 85.9 % 63.6-154

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\*=Accredited Analyte

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Reported:	09/16/2013	Sampling Type:	Soil
Project Name:	H. E. WEST B FEDERAL #41	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

**Sample ID: PT. 3 @ 2.5' (H302207-05)**

BTEX 8021B		mg/kg		Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.050	0.050	09/13/2013	ND	2.05	103	2.00	0.141		
Toluene*	<0.050	0.050	09/13/2013	ND	2.19	110	2.00	1.10		
Ethylbenzene*	<0.050	0.050	09/13/2013	ND	2.30	115	2.00	1.19		
Total Xylenes*	<0.150	0.150	09/13/2013	ND	6.96	116	6.00	1.34		
Total BTEX	<0.300	0.300	09/13/2013	ND						

*Surrogate: 4-Bromofluorobenzene (PIC) 108 % 89.4-126*

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	<b>896</b>	16.0	09/16/2013	ND	416	104	400	3.77		

TPH 8015M		mg/kg		Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
GRO C6-C10	<10.0	10.0	09/13/2013	ND	200	100	200	4.71		
DRO >C10-C28	<10.0	10.0	09/13/2013	ND	192	96.1	200	3.84		

*Surrogate: 1-Chlorooctane 78.8 % 65.2-140*
*Surrogate: 1-Chlorooctadecane 90.3 % 63.6-154*

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\* = Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**

 RICE ENVIRONMENTAL CONSULTING & SAFETY  
 HACK CONDER  
 419 W. CAIN  
 HOBBS NM, 88240  
 Fax To: (575) 397-1471

Received:	09/12/2013	Sampling Date:	09/09/2013
Reported:	09/16/2013	Sampling Type:	Soil
Project Name:	H. E. WEST B FEDERAL #41	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

**Sample ID: PT. 3 @ 3' (H302207-06)**

BTEX 8021B		mg/kg		Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.050	0.050	09/13/2013	ND	2.05	103	2.00	0.141		
Toluene*	<0.050	0.050	09/13/2013	ND	2.19	110	2.00	1.10		
Ethylbenzene*	<0.050	0.050	09/13/2013	ND	2.30	115	2.00	1.19		
Total Xylenes*	<0.150	0.150	09/13/2013	ND	6.96	116	6.00	1.34		
Total BTEX	<0.300	0.300	09/13/2013	ND						

*Surrogate: 4-Bromofluorobenzene (PIC) 109 % 89.4-126*

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	<b>48.0</b>	16.0	09/16/2013	ND	416	104	400	3.77		

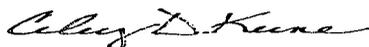
TPH 8015M		mg/kg		Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
GRO C6-C10	<10.0	10.0	09/13/2013	ND	200	100	200	4.71		
DRO >C10-C28	<10.0	10.0	09/13/2013	ND	192	96.1	200	3.84		

*Surrogate: 1-Chlorooctane 80.2 % 65.2-140*
*Surrogate: 1-Chlorooctadecane 95.2 % 63.6-154*

Cardinal Laboratories

\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

**Notes and Definitions**

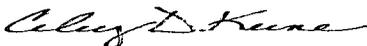
- S-06 The recovery of this surrogate is outside control limits due to sample dilution required from high analyte concentration and/or matrix interference's.
- ND Analyte NOT DETECTED at or above the reporting limit
- RPD Relative Percent Difference
- \*\* Samples not received at proper temperature of 6°C or below.
- \*\*\* Insufficient time to reach temperature.
- Chloride by SM4500Cl-B does not require samples be received at or below 6°C  
Samples reported on an as received basis (wet) unless otherwise noted on report

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Celey D. Keene, Lab Director/Quality Manager



**CHAIN-OF-CUSTODY AND ANALYSIS REQUEST**

101 East Marland, Hobbs, NM 88240  
 (575) 393-2326 FAX (575) 393-2476

Company Name: <i>Linn Energy</i>			<b>BILL TO</b>				<b>ANALYSIS REQUEST</b>																					
Project Manager: <i>Rick Rickman</i>			P.O. #:																									
Address:			Company:																									
City:		State:	Zip:		Attn:																							
Phone #:		Fax #:		Address:																								
Project #:		Project Owner:		City:																								
Project Name:			State:				Zip:																					
Project Location: <i>H.E. West Federal BV# 41</i>			Phone #:																									
Sampler Name: <i>Chris Flores</i>			Fax #:																									
FOR LAB USE ONLY													MATRIX		PRESERV.		SAMPLING											
Lab I.D.	Sample I.D.		(GRAB OR (COMP. # CONTAINERS	GROUNDWATER	WASTEWATER	SOIL	OIL	SLUDGE	OTHER:	ACID/BASE:	ICE / COOL	OTHER:	DATE	TIME														
<i>H302207</i>																												
	<i>1 Point 1 @ Surface</i>		<i>G</i>			<i>/</i>							<i>9-9-13</i>	<i>12:00pm</i>	<i>Chloride</i>													
	<i>2 Point 2 @ surface</i>		<i>G</i>			<i>/</i>								<i>12:45pm</i>	<i>TPH</i>													
	<i>3 Point 2 @ 2'</i>		<i>G</i>			<i>/</i>								<i>1:05pm</i>	<i>BTEX</i>													
	<i>4 Point 3 @ Surface</i>		<i>G</i>			<i>/</i>								<i>1:10pm</i>														
	<i>5 Point 3 @ 2.5'</i>		<i>G</i>			<i>/</i>								<i>1:35pm</i>														
	<i>6 Point 3 @ 3'</i>		<i>G</i>			<i>/</i>								<i>1:40pm</i>														

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Relinquished By: <i>[Signature]</i>	Date: <i>9-12-2013</i>	Received By: <i>Jodi Henson</i>	Phone Result: <input type="checkbox"/> Yes <input type="checkbox"/> No	Add'l Phone #:
	Time: <i>6:45</i>		Fax Result: <input type="checkbox"/> Yes <input type="checkbox"/> No	Add'l Fax #:
Relinquished By:	Date:	Received By:	REMARKS:	
	Time:			
Delivered By: (Circle One)	Sample Condition	CHECKED BY:		
Sampler - UPS - Bus - Other:	Cool <input checked="" type="checkbox"/> Intact <input checked="" type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	<i>[Signature]</i>		

† Cardinal cannot accept verbal changes. Please fax written changes to (575) 393-2326

#54

**Analytical Results For:**

 RICE ENVIRONMENTAL CONSULTING & SAFETY  
 HACK CONDER  
 419 W. CAIN  
 HOBBS NM, 88240  
 Fax To: (575) 397-1471

Received:	10/04/2013	Sampling Date:	10/04/2013
Reported:	10/08/2013	Sampling Type:	Soil
Project Name:	H. E. WEST B FEDERAL #41	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

**Sample ID: VERTICAL PT. 1 6' (H302413-01)**

Chloride, SM4500CI-B		mg/kg		Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
<b>Chloride</b>	<b>848</b>	16.0	10/08/2013	ND	400	100	400	7.69		
TPH 8015M		mg/kg		Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
GRO C6-C10	<10.0	10.0	10/07/2013	ND	192	95.8	200	0.902		
DRO >C10-C28	<10.0	10.0	10/07/2013	ND	181	90.4	200	0.0160		
<i>Surrogate: 1-Chlorooctane</i>		<i>96.6 %</i>	<i>65.2-140</i>							
<i>Surrogate: 1-Chlorooctadecane</i>		<i>97.9 %</i>	<i>63.6-154</i>							

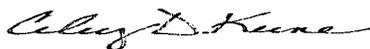
**Sample ID: VERTICAL PT. 1 6.5' (H302413-02)**

Chloride, SM4500CI-B		mg/kg		Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
<b>Chloride</b>	<b>944</b>	16.0	10/08/2013	ND	400	100	400	7.69		
TPH 8015M		mg/kg		Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
GRO C6-C10	<10.0	10.0	10/07/2013	ND	192	95.8	200	0.902		
DRO >C10-C28	<10.0	10.0	10/07/2013	ND	181	90.4	200	0.0160		
<i>Surrogate: 1-Chlorooctane</i>		<i>94.3 %</i>	<i>65.2-140</i>							
<i>Surrogate: 1-Chlorooctadecane</i>		<i>97.2 %</i>	<i>63.6-154</i>							

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\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

**Notes and Definitions**

ND	Analyte NOT DETECTED at or above the reporting limit
RPD	Relative Percent Difference
**	Samples not received at proper temperature of 6°C or below.
***	Insufficient time to reach temperature.
-	Chloride by SM4500Cl-B does not require samples be received at or below 6°C Samples reported on an as received basis (wet) unless otherwise noted on report

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Celey D. Keene, Lab Director/Quality Manager



# Appendix D

## Photo Documentation

**RICE Environmental Consulting and Safety (RECS)**  
P.O. Box 2948 Hobbs, NM 88241  
Phone 575.393.2967

# Linn H.E. West B Federal #41

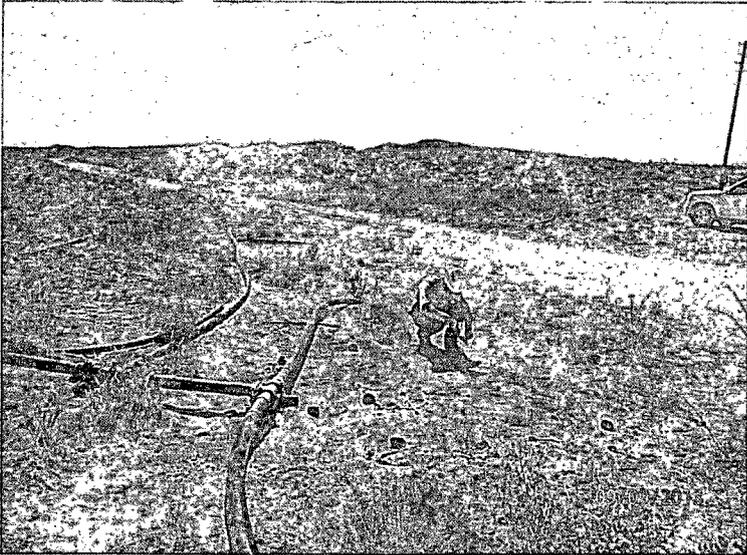
Unit Letter N, Section 10, T17S, R31E



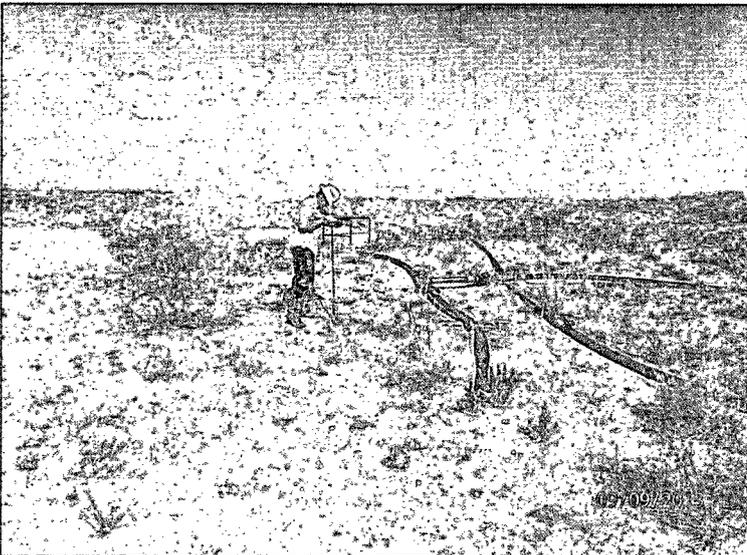
Initial release area, facing west 8/23/13



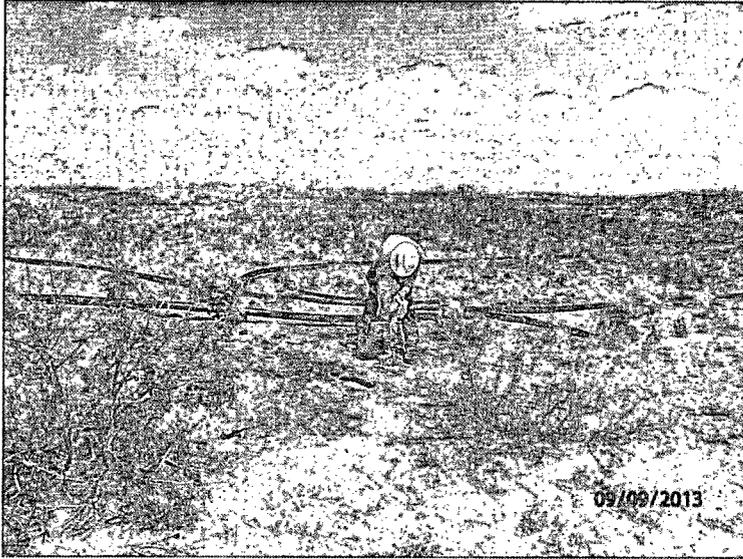
Initial release area, facing northwest 8/23/13



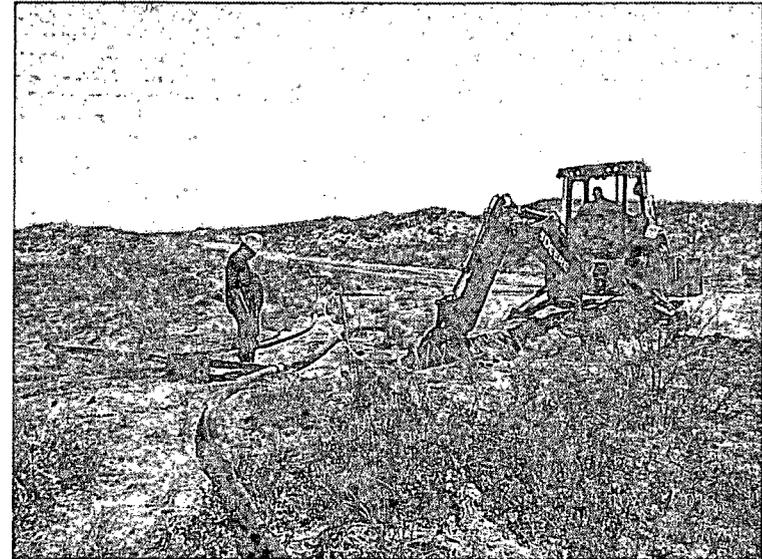
Sampling the surface, facing southeast 9/9/13



Auguring for depth, facing northwest 9/9/13



Plugging augur points in total with bentonite, facing  
northeast 9/9/13



Installing vertical at Pt. 1, facing east 10/4/13